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**(54) FLOOR SHAPE ESTIMATING DEVICE FOR LEG TYPE MOBILE ROBOT**

(57) Abstract:

PROBLEM TO BE SOLVED: To accurately estimate the shape of a floor on which a leg type mobile robot, particularly a biped walking robot, is trodden, and generate floor reaction as desired by absorbing influence when the floor shape is different from what is assumed.

SOLUTION: In a floor shape estimating apparatus 130, floor shape, more concretely estimated leg-to-leg floor inclination deviation  $\theta_{fd}$ , bestmv, is estimated on the basis of at least the control deviation of total floor reaction moment (compensatory total floor reaction moment  $M_{dmd}$ ), and a both-leg compensation angle  $\theta_{dbv}$  is corrected on the basis of the estimate. Further, floor shape, more concretely estimated each-foot sole floor inclination deviation  $\theta_{fnestmx}$ , y, are estimated on the basis of at least the control deviation of each foot sole floor reaction moment around a target each-foot sole floor reaction center

point, and each of foot sole compensation angles  $\theta_{nx}$ , y is corrected on the basis of the estimate.

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